

Program: BE Electronics Engineering

Curriculum Scheme: Revised 2016

Examination: Final Year Semester VII

Course Code: ELX702 and Course Name: Power Electronics

Time: 1 hour

Max. Marks: 50

Note to the students: - All the Questions are compulsory and carry equal marks.

Q1.	The UJT in the relaxation oscillator is always operated in -----.
Option A:	its saturation region
Option B:	its negative resistance region
Option C:	its saturation region
Option D:	its active region
Q2.	In Integral Cycle Control, the duty cycle is the ratio _____, where n and m are the number of ON cycles and number of OFF cycles respectively.
Option A:	$m/m+n$
Option B:	$n/m+n$
Option C:	m/n
Option D:	n/m
Q3.	The single phase full wave controlled rectifier with bridge configuration uses _____ number of SCRs.
Option A:	2
Option B:	4
Option C:	6
Option D:	8
Q4.	An AC supply with peak value of 200V supplies a resistive load through a single phase fully controlled rectifier, the output voltage for a firing angle of 30° will be -----.
Option A:	200v
Option B:	118.8v
Option C:	168.2v
Option D:	173.2v
Q5.	Single phase half bridge inverters requires -----.
Option A:	2 wire DC supply
Option B:	2 wire AC supply
Option C:	3 wire AC supply
Option D:	3 wire DC supply
Q6.	Pulses of different widths and heights are superimposed in case of _____

	harmonic reduction technique.
Option A:	Pulse Width Modulation
Option B:	Transformer Connection
Option C:	Stepped-Wave Inverter
Option D:	Single Phase Inverter
Q7.	SCR is a -----.
Option A:	Semi-controlled, Bidirectional switch
Option B:	Semi-controlled, Unidirectional switch
Option C:	Uncontrolled, Bidirectional switch
Option D:	Uncontrolled, Unidirectional switch
Q8.	SCR conducts a significant reverse current during commutation due to -----.
Option A:	failure of commutation
Option B:	hole storage effect
Option C:	presence of inductance in series with it
Option D:	SCR can never conduct reverse current
Q9.	Typical SCR di/dt ratings are in the range between -----.
Option A:	10- 500 A/ μ sec
Option B:	20- 500 A/ μ sec
Option C:	20- 1000 A/ μ sec
Option D:	30- 500 A/ μ sec
Q10.	Boost converter is -----.
Option A:	step up converter
Option B:	step down converter
Option C:	Half Wave DC Converter
Option D:	Full Wave converter
Q11.	Considering the holding current (I_h) and latching current (I_L) of a certain SCR ----- -----.
Option A:	$I_h < I_L$
Option B:	$I_h > I_L$
Option C:	$I_h = I_L$
Option D:	$I_h = 0.5 I_L$
Q12.	The average value of output voltage of single phase converter is -----.
Option A:	$(2V_m/\pi) \cdot \cos\alpha$
Option B:	$(V_m/\pi) \cdot \cos\alpha$
Option C:	$(V_m/2\pi) \cdot \cos\alpha$
Option D:	$(V_m/\pi) \cdot (1 + \cos\alpha)$
Q13.	For the high-frequency choppers, the device that is preferred is -----.
Option A:	TRIAC
Option B:	Thyristor

Option C:	Transistor
Option D:	GTO
Q14.	In R firing circuit of SCR, the range of firing angle is between -----.
Option A:	0 to 90°
Option B:	0 to 180°
Option C:	0 to 120°
Option D:	0 to 360°
Q15.	In the method of phase control, the phase relationship between _____ & _____ is controlled by varying the firing angle.
Option A:	supply current, supply voltage
Option B:	end of the load current, end of the load voltage
Option C:	start of the load current, start of the load voltage
Option D:	load current, load voltage
Q16.	In switching characteristics of SCR, delay time t_d is measured from the instant at which gate current reaches----- I_G to the instant at which anode current reaches --- -- I_A .
Option A:	0.5 , 0.1
Option B:	0.9 , 0.1
Option C:	0.9 , 0.5
Option D:	0.1 , 0.9
Q17.	A cycloconverter is -----.
Option A:	One stage frequency changer
Option B:	Two stage frequency changer
Option C:	Three stage frequency changer
Option D:	Frequency modulator
Q18.	The single phase full bridge inverter is operated from a 48 V battery and is supplying power to a pure resistive load of 10 ohm. What is fundamental output voltage and third harmonic?
Option A:	43.22,13.40
Option B:	41.22,14.40
Option C:	43.22,14.40
Option D:	45.22,12.40
Q19.	In RC firing circuit of SCR, the range of firing angle is between -----.
Option A:	0 to 180°
Option B:	0 to 90°
Option C:	0 to 120°
Option D:	0 to 360°
Q20.	Single phase fully controlled bridge rectifier operating from 230V, 50 Hz mains. If $\alpha = \pi/3$, Load resistance is 10 Ω and load inductance is 20mH. Determine the average output voltage.

Option A:	101.53
Option B:	105.62
Option C:	101.65
Option D:	103.53
Q21.	What is the pulse width of the single phase Modulation of PWM inverters to eliminate third harmonic?
Option A:	30 degrees
Option B:	60 Degrees
Option C:	180 Degrees
Option D:	90 Degrees
Q22.	Which equation is correct for duty cycle of chopper -----.
Option A:	T_{on}/T
Option B:	T_{off}/T
Option C:	T/T_{on}
Option D:	T/T_{off}
Q23.	In AC voltage controllers the -----.
Option A:	variable ac with variable frequency is obtained
Option B:	variable dc with variable frequency is obtained
Option C:	variable ac with fixed frequency is obtained
Option D:	variable dc with fixed frequency is obtained
Q24.	Inverter is a _____.
Option A:	AC to DC Converter
Option B:	AC to AC Converter
Option C:	DC to AC Converter
Option D:	Half Wave DC Converter
Q25.	In a step-up chopper circuit, if V_s is the source voltage and α is duty cycle, then the output voltage is -----.
Option A:	$V_s/(1 + \alpha)$
Option B:	$V_s(1 + \alpha)$
Option C:	$V_s(1 - \alpha)$
Option D:	$V_s/(1 - \alpha)$

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Note to the students:- All the Questions are compulsory and carry equal marks .

Q1.	One of the output values in the 4 point DFT of the sequence $x(n)=\{5,6,7,8\}$ is
Option A:	25
Option B:	29
Option C:	26
Option D:	30
Q2.	One of the output values in the 2 point DFT of the sequence $x(n)=\{1,2\}$ is
Option A:	1
Option B:	-1
Option C:	2
Option D:	-2
Q3.	The energy of the sequence whose DFT is $\{6,-2+2j, -2, -2-2j\}$ is
Option A:	14
Option B:	16
Option C:	18
Option D:	20
Q4.	Compute DFT of the sequence $x(n)= [1,1,0,0]$
Option A:	$[2,1-j,1,1+j]$
Option B:	$[2,1-j,0,1+j]$
Option C:	$[2,1+j,0,1-j]$
Option D:	$[2,1+j,1,1-j]$

Q5.	If $N=16$, the total number of complex multiplications and additions required respectively for computing N point DFT by radix-2 FFT are
Option A:	80 and 64
Option B:	64 and 80
Option C:	32 and 64
Option D:	24 and 12
Q6.	Number of complex additions and complex multiplications in DFT are:
Option A:	$N(N-1)$ and N^2
Option B:	N^2 and N
Option C:	$N \cdot \log(N)$ and $(N-1)$
Option D:	N and N^2
Q7.	If sequence $x[n] = \{1, 2, 3, 4\}$ have its DFT $X[k] = \{A, B, C, D\}$ then $x_1[n] = \{1, 4, 3, 2\}$ will have its DFT $X_1[k]$ equal to
Option A:	$X_1[k] = \{A, D, C, B\}$
Option B:	$X_1[k] = \{A, B, C, D\}$
Option C:	$X_1[k] = \{A, D, B, C\}$
Option D:	$X_1[k] = \{A, B, D, C\}$
Q8.	In the impulse invariant transformation RHS of S plane is mapped to
Option A:	Inside the unit circle in the Z plane
Option B:	Outside the unit circle in the Z plane
Option C:	On to the unit circle in the Z plane
Option D:	RHS of the Z plane
Q9.	What is the lowest order of the Butterworth filter with a pass band gain $K_p = -1$ dB at $\Omega_p = 4$ rad/sec and stop band attenuation greater than or equal to 20dB at $\Omega_s = 8$ rad/sec?

Option A:	4
Option B:	5
Option C:	6
Option D:	3
Q10.	In Butterworth and Chebyshev transfer function, when N is even, the nature of poles are _____
Option A:	Complex and exist as conjugate pairs
Option B:	Complex but not conjugate pairs
Option C:	One pole is complex and other poles are real
Option D:	One pole is real and other poles are complex and conjugate
Q11.	The roots of an Nth order Chebyshev polynomial $C_n(x)$ occur in the interval
Option A:	$0 \leq x \leq 1$
Option B:	$-1 \leq x \leq 0$
Option C:	$-1 \leq x \leq 1$
Option D:	$-0.5 \leq x \leq 0.5$
Q12.	Which of the following substitution is done in Bilinear transformation?
Option A:	$S = \frac{2}{T} \left[\frac{1+z^{-1}}{1-z^{-1}} \right]$
Option B:	$S = \frac{2}{T} \left[\frac{1+z^{-1}}{1-z^{-2}} \right]$
Option C:	$S = \frac{2}{T} \left[\frac{1-z^{-1}}{1+z^{-1}} \right]$
Option D:	$S = \frac{2}{T} \left[\frac{1+z^{-1}}{1+z^{-1}} \right]$
Q13.	Find the digital transfer function $H(z)$ by using impulse invariant method for the analog transfer function $H(s) = \frac{1}{s+2}$. Assume $T=0.5$ sec
Option A:	$H(z) = \frac{1}{1 - e^{-1}z^{-1}}$
Option B:	$H(z) = \frac{1}{1 - e^1z^{-1}}$
Option C:	$H(z) = \frac{1}{1 - e^{-1}z^1}$
Option D:	$H(z) = \frac{1}{1 - e^{-2}z^{-1}}$
Q14.	Linear FIR filter which is having even symmetry and even length is called _____
Option A:	Type 1
Option B:	Type 2
Option C:	Type 3
Option D:	Type 4

Q15.	For a digital bandstop filter with lower stop band edge frequency 100 Hz and upper stop band edge frequency 200 Hz and sampling frequency 1 khz, what is the filter coefficient at $n=0$, ie $h(0)$ is _____
Option A:	0.2
Option B:	0.8
Option C:	0.4
Option D:	0.6
Q16.	What is the width of the main lobe of the frequency response of a rectangular window of length M ?
Option A:	π/M
Option B:	$2\pi/M$
Option C:	$4\pi/M$
Option D:	$8\pi/M$
Q17.	Gibbs phenomenon is dominant in _____
Option A:	Hamming window
Option B:	Hanning window
Option C:	Barlett window
Option D:	Rectangular window
Q18.	If an FIR filter has constant phase delay as well as constant group delay and N is odd then it is of type _____
Option A:	Type I
Option B:	Type II
Option C:	Type III
Option D:	Type IV
Q19.	The dynamic range in bits in image processing applications is of the order of ____
Option A:	10 bits
Option B:	20 bits
Option C:	30 bits
Option D:	70 bits
Q20.	How is the sensitivity of filter coefficient quantization for FIR filters?
Option A:	High
Option B:	Low
Option C:	Moderate
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Q21.	A 3 stage decimator is used to reduce the sampling rate from 3072 kHz to 48 kHz. What is the overall decimation factor?
Option A:	64
Option B:	32
Option C:	128
Option D:	256
Q22.	Consider the discrete time sequence: $x(n) = \{1, 2, 3, 4\}$. Converting the sampling rate by a factor ($\frac{2}{3}$) will result in:
Option A:	{1, 0, 2, 0, 3, 0, 4, 0}
Option B:	{1, 0, 4}
Option C:	{1, 3}
Option D:	{1, 0, 0, 2, 0, 0, 3, 0, 0, 4, 0, 0}
Q23.	How many clock cycles are required when the MACD instruction is to be executed in a machine with Von Neumann Architecture?
Option A:	1
Option B:	2
Option C:	3
Option D:	4
Q24.	Which processor is having 2 multipliers?
Option A:	TMS320C10
Option B:	TMS320C6200
Option C:	DSP56300
Option D:	TMS320C50
Q25.	Which of the following DSP processor family has VLIW architecture?
Option A:	TMS3201X
Option B:	TMS3203X
Option C:	TMS3205X
Option D:	TMS3206X

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Option D:	TMS3206X

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Curriculum Scheme: Revised 2016

Examination: Final Year Semester VII

Course Code: ELXDLO7031 and Course Name: Neural Network and Fuzzy Logic

Time: 1 hour

Max. Marks: 50

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Q1.	In biological neurons, signals are transmitted_____.
Option A:	Optically
Option B:	By electrochemical means
Option C:	By electromechanical means
Option D:	Electrically
Q2.	Perceptron learning rule is derived from_____.
Option A:	Least Mean Squared Error Algorithm
Option B:	Delta Rule
Option C:	Back Propagation Algorithm
Option D:	Hebbian Learning Rule
Q3.	Maxnet can be used for _____.
Option A:	Classification
Option B:	Clustering
Option C:	Finding the neuron with maximum activation
Option D:	Predicting a variable when input vector is provided
Q4.	Which of the following neural network, the training input and the target output vectors are different?
Option A:	Heteroassociative Memory Network
Option B:	Autoassociative Memory Network
Option C:	Perceptron Neural network
Option D:	ADALINE Nerual Network
Q5.	Which of the following activation function used in Continuous BAM?
Option A:	Logistic Sigmoid
Option B:	Binary Step Activation Function
Option C:	Bipolar Step Activation Function
Option D:	Ramp Function

Q6.	Consider following function: $f(x) = 1; \text{ if } x \geq \theta$ $= -1; \text{ if } x < \theta$ It represents which of the following activation functions?
Option A:	Linear Function
Option B:	Binary Ramp Function
Option C:	Bipolar Ramp Function
Option D:	Bipolar Step Function
Q7.	Which of the following can be correct combination of weights & threshold for the Single layer perceptron network neural network to function as an AND gate?
Option A:	$W1=0; W2=0; \text{ Threshold}=0.5$
Option B:	$W1=1; W2=1; \text{ Threshold}=0.5$
Option C:	$W1=1; W2=1; \text{ Threshold}=1.5$
Option D:	$W1=0; W2=1; \text{ Threshold}=0$
Q8.	In a Maxnet with 4 neurons, net inputs are -0.12, 0.12, 0.36 and 0.6. What will be the result of applying activation function to these net inputs?
Option A:	0.12, 0.12, 0.36. and 0.6
Option B:	0, 0.12, 0.36. and 0.6
Option C:	0, 1, 1 and 1
Option D:	-1, 1, 1 and 1
Q9.	For the auto associative network with input vector [1 1 -1], Find the Weight vector with no self-connection.
Option A:	$\begin{bmatrix} 0 & 1 & -1 \\ 1 & 0 & -1 \\ -1 & -1 & 0 \end{bmatrix}$
Option B:	$\begin{bmatrix} 1 & 1 & -1 \\ 1 & 1 & -1 \\ -1 & -1 & 1 \end{bmatrix}$
Option C:	$\begin{bmatrix} 0 & 0 & -1 \\ 1 & 0 & -1 \\ -1 & -1 & 0 \end{bmatrix}$
Option D:	$\begin{bmatrix} 0 & 1 & -1 \\ 1 & 0 & -1 \\ -1 & 0 & 0 \end{bmatrix}$
Q10.	Weights corresponding to w_{ij} for $i = j$ in a discrete Hopfield network to store pattern [1 1 1 -1] are
Option A:	1, 1, 1 and 1
Option B:	-1, -1, -1 and -1
Option C:	0, 0, 0 and 0
Option D:	1, 1, 1 and -1

Q11.	The elements in two sets A and B are given as A= {2,4} and B= {a, b, c}. Find A X A Cartesian product of these two sets.
Option A:	{(1,2), (1,4), (1,2), (1,4)}
Option B:	{(1,2), (1,4), (2,2), (2,4)}
Option C:	{(4,2), (2,4), (4,2), (4,4)}
Option D:	{(2,2), (2,4), (4,2), (4,4)}
Q12.	Which of the following is correct terminology relationship between Biological and Artificial neuron?
Option A:	Cell – Net input
Option B:	Dendrites – Neuron
Option C:	Cell – Neuron
Option D:	Axon- Net input
Q13.	If a neural network has only one processing layer and output of each of the neurons in this layer is fed back to input of all neurons, then the network is
Option A:	Single layer feedforward network
Option B:	Multilayer feed forward network
Option C:	Single layer recurrent network
Option D:	Multilayer recurrent network
Q14.	Weight updation in ADALINE rule is done using which of the following expressions?
Option A:	$w_i(\text{new}) = w_i(\text{old}) + yx$
Option B:	$w_i(\text{new}) = w_i(\text{old}) + \alpha tx_i$
Option C:	$w_i(\text{new}) = w_i(\text{old}) + \alpha(t-y_{in})x_i$
Option D:	$w_i(\text{new}) = w_i(\text{old}) + \alpha y_{in}x_i$
Q15.	_____ logic function cannot be implemented using single layer perceptron model?
Option A:	OR
Option B:	AND
Option C:	XOR
Option D:	NOT
Q16.	In Mexican hat neural network, the neighbor's that affect the activation of neuron under consideration are part of _____.
Option A:	Region of cooperation
Option B:	Region of competition
Option C:	Region of Interaction
Option D:	Region of opposition
Q17.	Kohonen's SOMs are based on
Option A:	Hebb learning rule
Option B:	Perceptron learning rule

Option C:	Delta learning rule
Option D:	Winner-Takes-All learning Rule
Q18.	Which algorithm used for training of pattern association nets in Associative Memory Network
Option A:	Hebb Rule
Option B:	Perceptron Learning Rule
Option C:	Delta rule
Option D:	Kohonen Learning Rule
Q19.	If $s = [0 \ 0 \ 1 \ 1]$; $t = [1 \ 0]$ is the training pair for hetero associative memory, the weight vector corresponding to this training input using outer product rule is
Option A:	$\begin{bmatrix} 0 & 0 \\ 1 & 0 \\ 0 & 0 \\ 1 & 0 \end{bmatrix}$
Option B:	$\begin{bmatrix} 0 & 0 \\ 0 & 0 \\ 1 & 0 \\ 1 & 0 \end{bmatrix}$
Option C:	$\begin{bmatrix} 0 & 1 \\ 0 & 1 \\ 0 & 0 \\ 0 & 0 \end{bmatrix}$
Option D:	$\begin{bmatrix} 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 1 & 0 \end{bmatrix}$
Q20.	What is the following sequence of steps taken in designing a fuzzy logic machine?
Option A:	Fuzzification \rightarrow Rule evaluation \rightarrow Defuzzification
Option B:	Fuzzification \rightarrow Defuzzification \rightarrow Rule evaluation
Option C:	Rule evaluation \rightarrow Fuzzification \rightarrow Defuzzification
Option D:	Rule evaluation \rightarrow Defuzzification \rightarrow Fuzzification
Q21.	The fuzzy relation given by $\underline{A} \cap \underline{A} = \underline{A}$ and $\underline{A} \cup \underline{A} = \underline{A}$ Represents _____ property of fuzzy sets.
Option A:	Idempotency
Option B:	Distributivity
Option C:	Associativity
Option D:	Commutativity
Q22.	The main advantage of a continuous activation function is that:
Option A:	The activation function is differentiable
Option B:	The output range is restricted to (± 1)
Option C:	Unsupervised learning can be used

Option D:	Supervised learning can be used
Q23.	What is reinforcement learning?
Option A:	learning is based on critic information
Option B:	learning is based on desired output for an input
Option C:	learning is based on both desired output & evaluative signal
Option D:	learning is based on Euclidian Distance
Q24.	LVQ stands for
Option A:	Least Vector Quantization
Option B:	Learning Vector Quantization
Option C:	Learning Value Quantization
Option D:	Least Value Quantization
Q25.	Which of the following is a defuzzification method know as center of gravity method?
Option A:	Max-membership principle
Option B:	Centroid method
Option C:	Weighted average method
Option D:	Mean-max membership

Program: BE Electronics Engineering

Curriculum Scheme: Revised 2016

Examination: Fourth Year Semester VII

Course Code: ELXDLO7033 and Course Name: Robotics

Time: 1 hour

Max. Marks: 50

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Note to the students:- All the Questions are compulsory and carry equal marks .

Q1.	Pass 1 of DH algorithm gives
Option A:	KP Table
Option B:	LCD
Option C:	Arm Matrix
Option D:	Kinematic Parameters
Q2.	Forward robot dynamics problem aims to
Option A:	Determine the joint angles ,velocity and acceleration for the given values of joint torques
Option B:	Determine the joint torques for the given values of joint angles ,velocity and acceleration
Option C:	Determine the joint angles for the known position and orientation of the end effector with respect to base coordinate system
Option D:	Determine the position and orientation of end effector
Q3.	The maximum number of independent movements in 3D space of a robot is
Option A:	Resolution
Option B:	Reach
Option C:	Stroke
Option D:	Degree of freedom
Q4.	A nonlinear transformation which converts 3 D object to 2D image of the object is
Option A:	Euler number
Option B:	Perspective transformation
Option C:	Template matching
Option D:	Edge detection
Q5.	Configuration Space method is used for -----motion planning
Option A:	Fine
Option B:	Gross

Option C:	Grasp
Option D:	Grip
Q6.	Solving Inverse Kinematic Problem by assuming a set of solution and then calculation of deviation from expected value is
Option A:	Numerical Method
Option B:	Vector method
Option C:	Graphical Method
Option D:	Analytical Method
Q7.	Differential motion of a robot's hand frame [D] and the joint differential motion [D _θ] is related by
Option A:	[D]=[D _θ] + [J]
Option B:	[D] =[D _θ] - [J]
Option C:	[D] =[J] * [D _θ]
Option D:	[D]=[D _θ]*[J]
Q8.	The stopping criteria for shrink iterative process is
Option A:	$l_{v+1}(k,j) \neq l_v(k,j)$
Option B:	$l_{v+1}(k,j) > l_v(k,j)$
Option C:	$l_{v+1}(k,j) < l_v(k,j)$
Option D:	$l_{v+1}(k,j) = l_v(k,j)$
Q9.	Direct Kinematics has
Option A:	Stroke
Option B:	Reach
Option C:	Coordinate Transformations
Option D:	Work envelop
Q10.	Robotic joint torque (neglecting friction terms) consists of
Option A:	inertia terms only
Option B:	Coriolis and centrifugal terms only
Option C:	Gravity terms only
Option D:	inertia, Coriolis, centrifugal and gravity term
Q11.	$TCV = \begin{bmatrix} w^1 \\ w^2 \end{bmatrix}$ what is w^2
Option A:	Scaled Approach vector
Option B:	Scaled Sliding vector
Option C:	Scaled Normal Vector
Option D:	Yaw

Q12.	Chain code for the given object $I = \begin{bmatrix} 0 & 1 & 1 & 0 \\ 0 & 1 & 0 & 1 \\ 0 & 1 & 1 & 0 \\ 0 & 0 & 0 & 0 \end{bmatrix}$
Option A:	1,0,3,4,6,6
Option B:	4,6,3,0,1
Option C:	6,6,0,1,3,4
Option D:	3,4,6,6,0,1
Q13.	A general straight line trajectory for the tool in terms of initial point w^0 , final point w^1 in the tool configuration space and differential speed distribution function $s(t)$ is given by
Option A:	$w(t) = [1 - s(t)]w^0 + s(t)w^1$
Option B:	$w(t) = [1 + s(t)]w^0 + s(t)w^1$
Option C:	$w(t) = [s(t)w^0 + s(t)w^1$
Option D:	$w(t) = s(t)w^1$
Q14.	Grasping is always done with
Option A:	Surface perpendicular to approach vector
Option B:	Surface perpendicular to normal vector
Option C:	Surface perpendicular to sliding vector
Option D:	Surface perpendicular to the yaw
Q15.	Joint variable in prismatic joint is
Option A:	Link length
Option B:	Link twist angle
Option C:	Joint distance
Option D:	Joint angle
Q16.	Trajectory Planning for robots is easy to carry out in
Option A:	Cartesian Coordinate space
Option B:	Joint Space
Option C:	Both Cartesian coordinate and joint space equally
Option D:	Spherical coordinate space
Q17.	Which of the following is not a part of path planning
Option A:	Gross motion planning
Option B:	Fine Motion Planning
Option C:	Grasp Planning
Option D:	Perspective planning
Q18.	A method for checking whether a given part belongs to a class of objects
Option A:	Line descriptor
Option B:	Area Descriptor
Option C:	Region Growing
Option D:	Template matching

Q19.	Leading the robot to the final desired position is done by
Option A:	Lead through programming
Option B:	Text programming
Option C:	High level programming
Option D:	C++
Q20.	Heavy Load lifting is done using---- drive
Option A:	Electric
Option B:	Hydraulic
Option C:	Pneumatic
Option D:	Servo
Q21.	Linear interpolation motion requires
Option A:	Infinite instantaneous tool acceleration
Option B:	zero instantaneous tool acceleration
Option C:	finite instantaneous tool acceleration
Option D:	constant instantaneous tool acceleration
Q22.	Jacobian matrix
Option A:	Relates Cartesian velocity of a manipulator with its joint velocity
Option B:	Cannot be used to control a manipulator
Option C:	Cannot be used to check singularity of a manipulator
Option D:	Is used to determine joint torques and forces
Q23.	Which one of the following is a robot trajectory function
Option A:	Sinusoidal function
Option B:	Linear function with parabolic blends
Option C:	A pure linear function
Option D:	A triangular function
Q24.	Chain coding is used in images for
Option A:	Removal of isolated foreground pixel from background
Option B:	Template matching
Option C:	Edge detection
Option D:	Line descriptors
Q25.	Tool configuration vector is
Option A:	2X1 vector
Option B:	3X1 vector
Option C:	4X1 vector
Option D:	6X1 vector

Program: BE- ELECTRONICS Engineering

Curriculum Scheme: Revised-2016

Examination: Final Year Semester-VII

Course Code: ELXDLO7032 and Course Name: Advanced Networking Technologies

Time: 1 hour

Max. Marks: 50

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Note to the students :- All the Questions are compulsory and carry equal marks .

Q1.	Which Layer is not found in layered model of WLAN?
Option A:	Application
Option B:	physical
Option C:	LLC
Option D:	MAC
Q2.	Among these what is disadvantage of WLAN?
Option A:	Global operation
Option B:	Flexibility
Option C:	Planning
Option D:	Cost
Q3.	----- comprise all devices and equipment that are connected to the wireless LAN.
Option A:	Stations
Option B:	WAP
Option C:	Client
Option D:	BSS
Q4.	What is data rate of 802.11b ?
Option A:	11 MBPS
Option B:	17 MBPS
Option C:	30 MBPS
Option D:	100 GBPS
Q5.	Bluetooth is a _____ technology.
Option A:	Wired LAN
Option B:	Wireless LAN
Option C:	PAN
Option D:	Wide area Network
Q6.	Bluetooth devices operate in _____ band.
Option A:	2.7 GHz ISM

Option B:	2.5 GHz ISM
Option C:	2.6 GHz ISM
Option D:	2.4 GHz ISM
Q7.	Which of the following type of RFID tag have battery?
Option A:	Passive
Option B:	Active
Option C:	Semi-passive
Option D:	Both Active and Semi - passive
Q8.	In a ZigBee network there is _____ coordinator per network.
Option A:	4
Option B:	1
Option C:	7
Option D:	many
Q9.	To make SONET backward compatible with the current hierarchy, its frame design includes a system of _____.
Option A:	VTs
Option B:	STSs
Option C:	STMs
Option D:	OCs
Q10.	_____ allow insertion and extraction of signals.
Option A:	STS multiplexer/demultiplexers
Option B:	regenerators
Option C:	ADMs
Option D:	Digital Cross-connects
Q11.	SONET sends _____ frames per second.
Option A:	8000
Option B:	4000
Option C:	2000
Option D:	1000
Q12.	The intermediate line Repeater in DWDM system is used approx. _____ for compensating the loss in optical power, while the signal travels along the fiber
Option A:	30-40km
Option B:	80-100km
Option C:	50-60km
Option D:	10-20km
Q13.	In _____ the resources need to be reserved during the setup phase; the resources remain dedicated for the entire duration of data transfer phase until the teardown phase.
Option A:	frame switching

Option B:	datagram switching
Option C:	circuit switching
Option D:	Packet switching
Q14.	As the resources are reserved between two communicating end systems in circuit switching, _____ is achieved.
Option A:	Authentication
Option B:	guaranteed constant rate
Option C:	Reliability
Option D:	store and forward
Q15.	Which of the following is not an application layer service?
Option A:	Network virtual terminal
Option B:	File transfer, access, and management
Option C:	Mail service
Option D:	Error control
Q16.	In which port forwarding technique does the client act on the server's behalf?
Option A:	Remote Forwarding
Option B:	Local Forwarding
Option C:	Stable Forwarding
Option D:	Global forwarding
Q17.	SNMP is the framework for managing devices in an internet using the _____
Option A:	TCP/IP protocol
Option B:	UDP
Option C:	SMTP
Option D:	FTP
Q18.	In Distance Vector Routing , each node knows the-----
Option A:	Distance
Option B:	Neighbor
Option C:	Path
Option D:	Way
Q19.	In link state routing the ----- information (=link state) is broadcast to all nodes in the network.
Option A:	Path
Option B:	Distance
Option C:	Cost
Option D:	Channel
Q20.	What does EGP stand for .
Option A:	Error Gap path
Option B:	Extended gate payment
Option C:	Exterior guiding path

Option D:	Exterior Gateway Protocol
Q21.	In RIP what is the maximum hop count ?
Option A:	15
Option B:	2
Option C:	7
Option D:	98
Q22.	_____ refers to the location and management of the cloud's infrastructure.
Option A:	Service
Option B:	Deployment
Option C:	Application
Option D:	Network
Q23.	Which of the following is related to the service provided by Cloud?
Option A:	Sourcing
Option B:	Ownership
Option C:	Reliability
Option D:	AaaS
Q24.	_____ provides virtual machines, virtual storage, virtual infrastructure, and other hardware assets.
Option A:	IaaS
Option B:	SaaS
Option C:	PaaS
Option D:	AaaS
Q25.	These cloud services are of the form of utility computing i.e. the _____ uses these services pay-as-you-go model.
Option A:	Cloud providers
Option B:	Clients
Option C:	End users
Option D:	Cloud users

Program: BE _____ Engineering

Curriculum Scheme: Revised 2016

Examination: Final Year Semester VII

Course Code: ILO 7017 and Course Name: Disaster Management and

Mitigation Measures

Time: 1 hour

Max. Marks: 50

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Note to the students:-All the Questions are compulsory and carry equal marks .

Q1.	_____ can be explained as, tragic set of events which consequently cause damage to property and life?
Option A:	Hazards
Option B:	Vulnerability
Option C:	Disaster
Option D:	Risk
Q2.	Which natural disaster is a sudden and violent shaking of the ground, sometimes causing great destruction, as a result of movements within the earth's crust or volcanic action?
Option A:	Earthquake
Option B:	Tsunami
Option C:	Thunderstorm
Option D:	Flooding
Q3.	Which of the following is not a component of disaster management cycle?
Option A:	Preparedness
Option B:	Response
Option C:	Construction
Option D:	Recovery
Q4.	What is EMS?
Option A:	Emergency medical services
Option B:	Effective mitigation system
Option C:	Emergency management system
Option D:	Effective management system
Q5.	N.D.R.F Stands for
Option A:	National Disaster Response Fund
Option B:	Natural Disaster Relief Fund
Option C:	National Dedicated Relief Fund
Option D:	National Dynamic Response Fund
Q6.	Risk can be dealt with following ways except:

Option A:	Risk acceptance
Option B:	Risk avoidance
Option C:	Risk reporting
Option D:	Risk reduction
Q7.	Which of the following is not a man-made hazard?
Option A:	Leakage of Toxic waste
Option B:	War
Option C:	Drought
Option D:	Environmental Pollution
Q8.	Which of the following are not the causes of manmade disaster?
Option A:	Technological
Option B:	Transportation
Option C:	Landslides
Option D:	Production errors
Q9.	Who heads the crisis management Committee
Option A:	Prime Minister
Option B:	President
Option C:	Cabinet Secretary
Option D:	Ministry Of Environment
Q10.	EMS technology helps in aread which are prone to effective disaster management except:
Option A:	Trials of evacuation and general disaster plans
Option B:	Training volunteers
Option C:	Construction of shelter
Option D:	Prevention of next emergency
Q11.	What is called for the manuals that identify the role of each officer in State for managing the natural disasters?
Option A:	State Relief Manuals
Option B:	State Environmental Protection Manuals
Option C:	State Disaster Manuals
Option D:	State Protection Manuals
Q12.	The risk mapping and control does not depend on:
Option A:	The efforts taken by an organization
Option B:	Money
Option C:	Vulnerability analysis
Option D:	The action plans
Q13.	Tsunami's can occur only during
Option A:	Evening
Option B:	Afternoon
Option C:	Any time of the day or night
Option D:	Morning

Q14.	Under which ministry Disaster Management Authority comes
Option A:	Ministry Of Environment
Option B:	Ministry of Foreign Affaires
Option C:	Ministry of Pollution
Option D:	Ministry of Home Affairs
Q15.	Which of the following components is not the part of EMS?
Option A:	Communication
Option B:	Recovery
Option C:	Budget
Option D:	Materials requirement
Q16.	Which the first step adopted for the assessment of the requests made by the state government to CENTRAL Government.
Option A:	Central Govt directly sends funds to State Govt
Option B:	The central team is deputed to make the on the spot assessment
Option C:	Finance Ministry Guides Cental Govt to relese funds
Option D:	Union Home Secretary visits State Govt affected by Disaster
Q17.	What is CBDM?
Option A:	Customers biased disaster management
Option B:	Cluster based disaster management
Option C:	Community based disaster management
Option D:	Consumer based disaster management
Q18.	The Richter scale expresses an earthquakes
Option A:	Magnitude
Option B:	Location
Option C:	Duration
Option D:	Depth
Q19.	Who is not first responder
Option A:	Police
Option B:	SDRF
Option C:	Fire and Medical Services
Option D:	NDRF
Q20.	Which of the following component of EMS does not add a value to disaster management?
Option A:	Emergency medical services
Option B:	Hazardous Materials Management
Option C:	Prevention of disaster
Option D:	Response and Recovery
Q21.	Prompt and effective response minimizes loss of life and property.
Option A:	Prompt and effective response
Option B:	Resource Allocation

Option C:	Planning
Option D:	Financing
Q22.	Floods can be prevented by
Option A:	Afforestation
Option B:	Cutting the forest
Option C:	Tilling the land
Option D:	Removing the top soil
Q23.	Which amongst the following ensures accurate documentation of all aspects of disaster events for creating good historical records for future research and mitigation planning
Option A:	NDMA
Option B:	MoUD
Option C:	NDRF
Option D:	NIDM
Q24.	The point of the earth's surface directly above the point where an earthquake occurs is called
Option A:	Focus
Option B:	Epicenter
Option C:	Fracture
Option D:	Fault
Q25.	Which committee recommend financial assistance to various disaster across country
Option A:	National Executive Committee
Option B:	Finance Committee
Option C:	Central Committee
Option D:	Cabinet Committee

7.	Which of the following is a property of a dynamic programming problem?
	a) Optimal substructure
	b) Non-Overlapping sub problems
	c) Local Optimal choice
	d) The given problem can be reduced to the 3-SAT problem
8.	When a problem is solved using the top-down approach of dynamic programming, it usually
	a) Decreases both, the time complexity and the space complexity
	b) Increases the time complexity and decreases the space complexity
	c) Increases both, the time complexity and the space complexity
	d) Increases the space complexity and decreases the time complexity
9.	Which of the following problems should be solved using dynamic programming?
	a) Long Integer Multiplication
	b) Reliability problems
	c) Spanning Tree
	d) Matrix Multiplication
10.	When Minimax and Maximin criteria matches, then
	a) Fair game is exists
	b) Unfair game is exists
	c) Mixed strategy exists
	d) Saddle point exists.
11.	The games with saddle points are:
	a) Probabilistic in nature
	b) Normative in nature
	c) Stochastic in nature
	d) Deterministic in nature
12.	The size of the Payoff matrix of a game can be reduced by using the principle of
	a) Saddle point
	b) Dominance
	c) Game transpose
	d) Game Inverse
13.	If orders are placed with size the EOQ, then the re-order costs component is
	a) Equal to the holding cost component
	b) Greater than the holding cost component
	c) Less than the holding cost component
	d) Either greater or less than the holding cost component
14.	Which cost can vary with order quantity
	a) Unit cost only
	b) Re-order cost
	c) Holding cost only
	d) All of these
15.	Annual demand for product costing Rs. 100 per piece is Rs. 900 Ordering cost per order is Rs. 100 and inventory holding cost is Rs.2 per unit per year. The economic lot size is
	a) 200
	b) 300
	c) 400
	d) 500
16.	Consider the following 7 jobs J1, J2, J3, J4, J5, J6 and J7. They are processed on machines A and B in the order AB. The processing times on machine A for the 7 jobs are

[Type here]

	[3, 12, 13, 4, 10, 11, 9] and the processing times on machine B for the 7 jobs are [8, 9, 8, 6, 13, 1, 3]. The optimum sequence of the jobs will have the first job going to machine A as -
a)	J1
b)	J3
c)	J7
d)	J6
17.	Travelling Salesman Problem can be solved using: a-Simplex Method, b-Assignment Method, c-Dynamic Programming, d- Waiting line Method
a)	Only a
b)	Only b
c)	Only c
d)	With b and d
18.	The Vogel approximation method is used for solving transportation problems as it gives -
a)	neither optimum nor feasible solution
b)	both optimum and feasible solution
c)	Optimum but infeasible solution
d)	Feasible but non-optimum solution
19.	In the Dual Simplex Method, the Initial Table represents a solution -
a)	that is feasible but not Optimal
b)	that is both feasible and optimal
c)	that is optimal but not feasible
d)	neither optimal nor feasible
20.	For a Maximization LPP, if a constraint has a surplus variable, the artificial variable added in the Dual Simplex Method will have -
a)	positive large co-efficient in the objective function
b)	negative large co-efficient in the objective function
c)	zero co-efficient in the objective function
d)	artificial variables are not required in Dual Simplex Method
21.	If the primal LPP is Maximization, the dual of the dual for the primal LPP is
a)	Minimization
b)	Maximization
c)	Can be Minimization or Maximization
d)	Infeasible
22.	The optimal solution in a linear programming model will
a)	always be a slack variable
b)	always be a surplus variable
c)	always occur at an extreme point
d)	always be outside the feasible solution space
23.	A company produces two products: Product A and Product B. Each product must go through two processes. Each Product A produced requires 2 hours in Process 1 and 5 hours in Process 2. Each Product B produced requires 6 hours in Process 1 and 3 hours in Process 2. There are 80 hours of capacity available each week in each process. Each unit of Product A produced generates \$6.00 in profit for the company. Each unit of Product B produced generates \$9.00 in profit for the company. If A = the number of units of Product A to produce each week and B = number of units of Product B to produce each week, then the capacity constraint for Process 2 would be
a)	$5A + 3B \geq 80$
b)	$6A + 3B \leq 80$
c)	$5A + 3B \leq 80$
d)	$5A + 3B < 80$

[Type here]

24.	A company produces two products: Product A and Product B. Each product must go through two processes. Each Product A produced requires 2 hours in Process 1 and 5 hours in Process 2. Each Product B produced requires 6 hours in Process 1 and 3 hours in Process 2. There are 80 hours of capacity available each week in each process. Each unit of Product A produced generates \$6.00 in profit for the company. Each unit of Product B produced generates \$9.00 in profit for the company. The optimal weekly profit for the company would be																																																			
a)	\$125																																																			
b)	\$150																																																			
c)	\$156																																																			
d)	\$162																																																			
25.	<p>The following transportation table shows the cost of shipping one unit from each source to each destination in the upper right hand corner of each cell, as well as the supply capacities and demand requirements:</p> <table border="1" data-bbox="414 571 1260 772"> <thead> <tr> <th colspan="2" rowspan="2"></th> <th colspan="3">Destination</th> <th rowspan="2">Supply</th> </tr> <tr> <th>Los Angeles</th> <th>New York</th> <th>Houston</th> </tr> </thead> <tbody> <tr> <th rowspan="4">Source</th> <th>Memphis</th> <td>\lfloor_5</td> <td>\lfloor_4</td> <td>\lfloor_2</td> <td>6,000</td> </tr> <tr> <th>Boise</th> <td>\lfloor_3</td> <td>\lfloor_6</td> <td>\lfloor_4</td> <td>3,000</td> </tr> <tr> <th>Omaha</th> <td>\lfloor_6</td> <td>\lfloor_5</td> <td>\lfloor_3</td> <td>8,000</td> </tr> <tr> <th>Demand</th> <td>5,000</td> <td>7,500</td> <td>4,500</td> <td>17,000</td> </tr> </tbody> </table> <p>The optimal solution is:</p> <table border="1" data-bbox="494 840 1197 1008"> <thead> <tr> <th colspan="2" rowspan="2"></th> <th colspan="3">Destination</th> </tr> <tr> <th>Los Angeles</th> <th>New York</th> <th>Houston</th> </tr> </thead> <tbody> <tr> <th rowspan="3">Source</th> <th>Memphis</th> <td>0</td> <td>1500</td> <td>4500</td> </tr> <tr> <th>Boise</th> <td>3000</td> <td>0</td> <td>0</td> </tr> <tr> <th>Omaha</th> <td>2000</td> <td>6000</td> <td>0</td> </tr> </tbody> </table> <p>The total amount shipped from Boise to Los Angeles is:</p>			Destination			Supply	Los Angeles	New York	Houston	Source	Memphis	\lfloor_5	\lfloor_4	\lfloor_2	6,000	Boise	\lfloor_3	\lfloor_6	\lfloor_4	3,000	Omaha	\lfloor_6	\lfloor_5	\lfloor_3	8,000	Demand	5,000	7,500	4,500	17,000			Destination			Los Angeles	New York	Houston	Source	Memphis	0	1500	4500	Boise	3000	0	0	Omaha	2000	6000	0
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d)	5,000																																																			

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Program: _____
Curriculum Scheme: Rev 2016
Examination: Semester VII
Course Code: ILO7012 and Course Name: Reliability Engineering

Time: 1 hour

Max. Marks: 50

Note to the students:- All the Questions are compulsory and carry equal marks .

Q1.	If A and B are two events such that $P(a) = 0.3$, $P(b) = 0.6$, and $P(A/\sim B)$ is _____
Option A:	0.3
Option B:	0.5
Option C:	0.8
Option D:	0.2
Q2.	Previous probabilities in Bayes Theorem that are changed with help of new available information are classified as _____
Option A:	Independent Probabilities
Option B:	Posterior probabilities
Option C:	Interior probabilities
Option D:	Dependent probabilities
Q3.	Let X be a random variable with probability distribution function $f(x) = 0.2$ for $ x < 1$ $= 0.1$ for $1 < x < 4$ $= 0$ otherwise The probability $P(0.5 < x < 5)$ is _____
Option A:	0.3
Option B:	0.5
Option C:	0.4
Option D:	0.8

Q4.	If 'm' is the mean of a Poisson Distribution, the standard deviation is given by _____.
Option A:	\sqrt{m}
Option B:	m^2
Option C:	m
Option D:	$\frac{m}{2}$
Q5.	What is the mean time to failure if time to failure of a gadget follows Weibull distribution with scale =1000 hours and shape = 0.5?
Option A:	2500 hours
Option B:	1500 hours
Option C:	3000 hours
Option D:	2000 hours
Q6.	The failure density function f(t) is defined as the derivative of the
Option A:	Failure probability
Option B:	Intensity
Option C:	Pass probability
Option D:	Density
Q7.	Mean time between failures can be defined as:
Option A:	$\frac{\text{total number of failure}}{\text{total operation time}}$
Option B:	$\frac{\text{total operation time}}{\text{total number of failure}}$

Option C:	$\frac{\text{total operation time}}{\text{total number of components}}$
Option D:	$\frac{\text{total number of components}}{\text{total operation time}}$
Q8.	A component with time to failure T has constant failure rate $z(t) = \lambda = 2.5 \times 10^{-5} [\text{hours}]^{-1}$ Determine the probability that the component survives a period of 2 months without failure.
Option A:	0.815
Option B:	0.965
Option C:	0.911
Option D:	0.864
Q9.	The system reliability of the parallel system
Option A:	Is greater than the reliability of any subsystem
Option B:	Is equal to the reliability of the best subsystem
Option C:	Decreases as more redundant subsystem are added to the system
Option D:	Increase if the subsystem with the lowest reliability is removed
Q10.	Consider a four component system of which the components are independent and identically distributed with Constant Failure Rate (CFR). If $R_2(100) = 0.95$, find the individual component Mean Time to Failure?
Option A:	0.128
Option B:	0.0128
Option C:	0.000128
Option D:	1

Q11.	What failure rate must each component of a series system have, so that the probability that the system operates beyond 1000 hours is 0.9917 (Assume that all three components are independent, operate simultaneously, and have identical constant failure rates.)
Option A:	0.00278 per hour
Option B:	2.78×10^{-6} per hour
Option C:	2.78×10^{-5} per hour
Option D:	0.0287 per hour
Q12.	The components each with a reliability of 0.9 are placed in series. What is the reliability of the system?
Option A:	0.729
Option B:	0.986
Option C:	0.458
Option D:	0.589
Q13.	If the probability of a car starting on a sub-zero morning is 0.5 and we have two such cars. What is the probability that at least one of the cars will start on a sub-zero morning?
Option A:	0.92
Option B:	0.75
Option C:	0.81
Option D:	0.60
Q14.	Calculate the system unavailability, if the failure rate of a system is 2 failures/year and the average repair time is 20 hours.
Option A:	14.97 hr/yr
Option B:	18.47 hr/yr
Option C:	39.81 hr/yr

Option D:	32.17 hr/yr
Q15.	Which of the following approach is not the redundancy approach?
Option A:	Unit redundancy
Option B:	Component redundancy
Option C:	Strong component should be identified and strengthened for reliability
Option D:	Mixed redundancy
Q16.	For the successful operation of the system, the reliability of the system will be much better due to _____
Option A:	Absence of redundant element and proper operation one element
Option B:	Presence of redundant element and improper operation one element
Option C:	Absence of redundant element and improper operation one element
Option D:	Presence of redundant element and proper operation one element
Q17.	In unit redundancy, for improving the reliability of the system, a similar system should be added to the existing system in _____
Option A:	Series
Option B:	Both series and parallel
Option C:	parallel
Option D:	No connection
Q18.	Redundant system consisting of two or more component connected in parallel and both components were operating simultaneously is called _____
Option A:	Standby redundancy
Option B:	Active redundancy
Option C:	Sitting redundancy
Option D:	Inactive redundancy

Q19.	In order to maintain maintainability in the system, repair time must _____
Option A:	Be increased
Option B:	Be reduced
Option C:	Be kept constant
Option D:	Keeps on changing
Q20.	While discussing the concept of parts interchangeability, "if new part does not meet the required functional substitution then,
Option A:	It should be fractionally interchangeability
Option B:	It should not be physically interchangeability
Option C:	It should be physically interchangeability
Option D:	It should not be fractionally interchangeability
Q21.	The inherent availability can be calculated for repairable system as:
Option A:	$A_I = \frac{MTBF}{MTTF + MTTR}$
Option B:	$A_I = \frac{MTTF}{MTTF + MTTR}$
Option C:	$A_I = \frac{MTTF}{MTBF + MTTR}$
Option D:	$A_I = \frac{MTTF}{MTTF + MTTR}$
Q22.	Risk priority number is
Option A:	Product of severity (S), Occurrence (O) & Detection (D)
Option B:	Sum of severity (S), Occurrence (O) & Detection (D)

Option C:	Maximum of Severity (S), Occurrence (O) & Detection (D)
Option D:	Minimum of Severity (S), Occurrence (O) & Detection (D)
Q23.	Failure mode and effect analysis (FMEA) provide a checklist procedure. Which of the following question is NOT likely to feature on the checklist?
Option A:	What would be the cost of avoiding failure be?
Option B:	How likely is such a failure to be detected before it affects the customer?
Option C:	What is the likelihood that failure will occur?
Option D:	What would the consequences of the failure be?
Q24.	Which of the following is not the advantage of Event Tree Analysis are:
Option A:	Structured, rigorous and methodical approach
Option B:	Can be effectively performed on varying levels of design detail
Option C:	Permits probability assessment
Option D:	Partial successes/failure are distinguishable
Q25.	What is the probability of an impossible event?
Option A:	0
Option B:	1
Option C:	Not defined
Option D:	Insufficient data

Program: BE Engineering

Curriculum Scheme: Revised 2016

Examination: Final Year Semester VII

Course Code: ILO7018 and Course Name: Energy Audit and Management

Time: 1 hour

Max. Marks: 50

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Note to the students:- All the Questions are compulsory and carry equal marks .

Q1.	Choose the correct source of renewable energy.
Option A:	Natural gas
Option B:	Coal
Option C:	Tidal
Option D:	Nuclear
Q2.	Primary energy content of all fuels are generally expressed in terms of
Option A:	KW
Option B:	KVA
Option C:	KVAR
Option D:	Ton of oil equivalent (toe)
Q3.	Which of the following is a form of secondary energy?
Option A:	Steam
Option B:	Petrol
Option C:	Crude oil
Option D:	Coal
Q4.	The objective of Energy Management is to
Option A:	Minimize energy costs
Option B:	Minimize production
Option C:	Minimize duration of work
Option D:	Minimize manpower
Q5.	Energy Audit is the key to a systematic approach for decision-making in the area of
Option A:	Time management
Option B:	Water management.
Option C:	Pollution management
Option D:	energy management
Q6.	The verification, monitoring and analysis of use of energy and its report with recommendations is
Option A:	Energy monitoring

Option B:	Energy Conservation
Option C:	Energy Audit
Option D:	energy management
Q7.	Bench-mark in Energy Audit refers to:
Option A:	Trend of energy use
Option B:	Profit margin in energy business
Option C:	Reference point for managing energy in organization
Option D:	Energy Losses
Q8.	Energy Audit can be classified into the following types.
Option A:	Short Audit and Lengthy Audit
Option B:	Preliminary Audit and Secondary Audit
Option C:	Feasible Audit and non-feasible Audit
Option D:	Preliminary Audit, targeted energy audit and Detailed Audit
Q9.	For charging Maximum demand charges, maximum demand is measured in
Option A:	kWh
Option B:	kVA
Option C:	kVAr
Option D:	KV
Q10.	Power factor is ratio of
Option A:	Active power to apparent power
Option B:	Active power to reactive power
Option C:	Reactive power to apparent power
Option D:	Apparent power to active power
Q11.	Maximum demand controller is used to
Option A:	Switch off non-essential loads in a logical sequence
Option B:	Controls the power factor of the plant
Option C:	Switch off essential loads in a logical sequence
Option D:	Exceed the demand of the plant
Q12.	For which among the following consumers was penalty imposed for low power factor before 1st April, 2020
Option A:	Residential
Option B:	Industrial
Option C:	Agricultural
Option D:	BPL customers
Q13.	The basic functions of electronic ballast exclude one of the following:
Option A:	To ignite the lamp
Option B:	To reduce lumen output of the lamp
Option C:	To supply power to the lamp

Option D:	To stabilize the gas discharge
Q14.	Find the odd retrofit group for illumination from the following
Option A:	capacitor based control
Option B:	photo-sensors
Option C:	timer based control
Option D:	Occupancy sensors
Q15.	Motor loading calculation is based on
Option A:	Ideal load of motor
Option B:	actual operating load of motor
Option C:	90 % load of motor
Option D:	future load of the motor
Q16.	The motor input power P_i in pump can be measured by using
Option A:	Stroboscope
Option B:	Efficiency meter
Option C:	Portable power analyzer.
Option D:	Tachometer
Q17.	One Tons of refrigeration (TR) is equivalent to
Option A:	3420 Btu/h
Option B:	3024 kCal/h
Option C:	1200 thermal kW
Option D:	3024 kW/ton
Q18.	What does a LEED rating reflect?
Option A:	The cost of a building
Option B:	How green a building is
Option C:	The carbon footprint of a building's occupants
Option D:	The location of a building
Q19.	What is the name for the procedure used to clear buildings of contaminants before they are occupied?
Option A:	Flush-out
Option B:	Infiltration
Option C:	Ventilation
Option D:	Ex-filtration
Q20.	Which of the following trap has intermittent discharge for large load
Option A:	Inverted bucket
Option B:	Float
Option C:	Thermostatic
Option D:	Bimetallic

Q21.	Which is the best steam for an industrial process heating
Option A:	Dry saturated steam
Option B:	Wet steam
Option C:	Dry steam
Option D:	Superheated steam
Q22.	Which one is the most efficient equipment having Star rating
Option A:	2 star
Option B:	5 star
Option C:	4 star
Option D:	1 star
Q23.	Which one is NOT the reason of incomplete combustion
Option A:	Shortage of air
Option B:	Excess of fuel
Option C:	Poor distribution of fuel
Option D:	GCV of fuel
Q24.	The heat loss from the surface is expressed in
Option A:	Watt
Option B:	Watt/sq. meter-deg K
Option C:	Watt/sq. meter-deg C
Option D:	Joules
Q25.	Which is the purpose of insulation
Option A:	To facilitate free flow of heat
Option B:	Offers better process control by maintaining process temperature
Option C:	Reduce temperature of steam
Option D:	Refrigerated surface below dew point

Program: BE Engineering

Curriculum Scheme: Revised 2016

Examination: Final Year

Semester VII

Course Code: **ILO7014**

Course Name: **Design of Experiments**

Time: 1 hour

Max. Marks: 50

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Note to the students:- All the Questions are compulsory and carry equal marks .

Q1.	_____ is a vital part of the scientific (or engineering) method
Option A:	Evaluation
Option B:	Experimentation
Option C:	Estimation
Option D:	Authentication
Q2.	The general approach to planning and conducting the experiment is called the _____.
Option A:	Strategy of experimentation
Option B:	Method of experimentation
Option C:	Preparation of experimentation
Option D:	Outline of experimentation
Q3.	The basic principles of experimental design are_____.
Option A:	Randomization, repetition, blocking
Option B:	Replication, blocking randomization
Option C:	Randomization, repetition, factorization
Option D:	Optimization, blocking, factorization
Q4.	Consider the mathematical model $Y = f(x, z);$ $\Delta y = \frac{\partial f}{\partial x} \Delta x + \frac{\partial f}{\partial z} \Delta z$ now Determining the most influential variables on the response y is called
Option A:	Process control
Option B:	Robust design
Option C:	Process characterization
Option D:	Process optimization

Q5.	The strategy which fails to consider any possible interaction between the factors is called
Option A:	Multiple factors at a time (MFAT)
Option B:	one-factor-at-a-time (OFAT)
Option C:	Best guess
Option D:	Best fit
Q6.	Which of the following is a correct expression for a multiple linear regression model having three regressor variables?
Option A:	$y = x_1 + \beta_2x_2 + \beta_3x_3 + \epsilon$
Option B:	$y = \beta_0 + \beta_1x_1 + \beta_2x_2 + \beta_3x_3 + \epsilon$
Option C:	$y = \beta_1x_1 + \beta_2x_2 + \beta_3x_3$
Option D:	$y = \beta_0 - \beta_1x_1 + \beta_2x_2 - \beta_3x_3 + \epsilon$
Q7.	The _____ is typically used to estimate the regression coefficients in a multiple linear regression model.
Option A:	Method of least squares
Option B:	Method of Jacobians
Option C:	Runge-Kutta Method
Option D:	Method of Moments
Q8.	In multiple linear regression problems, certain _____ about the model parameters are helpful in measuring the usefulness of the model.
Option A:	tests of hypotheses
Option B:	tests of uniqueness
Option C:	tests of convergence
Option D:	tests of divergence
Q9.	How many dependent variables does a two-way ANOVA have?
Option A:	Four
Option B:	Two
Option C:	Three
Option D:	One
Q10.	The analysis of variance will have _____ parts
Option A:	One
Option B:	Three
Option C:	Two
Option D:	Four

Q11.	In Split spot design, Randomization is done in ____ stages
Option A:	1
Option B:	2
Option C:	3
Option D:	4
Q12.	In field experiments certain factors may require _____ plots than for others.
Option A:	Lesser
Option B:	Same
Option C:	Larger
Option D:	Small
Q13.	The key idea used for the successful implementation of fractional factorial design are _____.
Option A:	Sparsity of effects principle, randomization, repetition
Option B:	Sparsity of effects principle, projection property, sequential experimentation
Option C:	Sparsity of effects principle, projection property, randomization
Option D:	Sparsity of effects principle, projection property, randomization, repetition
Q14.	When we estimate A, B, and C with complementary one-half fraction, we are really estimating _____.
Option A:	(A X BC, B X AC, C X AB)
Option B:	(A + BC, B + AC, C + AB)
Option C:	(A – BC, B – AC, C – AB)
Option D:	(A – BC, B X AC, C + AB)
Q15.	ANOVA is a statistical method of comparing the _____ of several populations
Option A:	Variance
Option B:	Standard deviations
Option C:	Means
Option D:	Mean deviation
Q16.	In a factorial experiment _____.
Option A:	Testing one factor at a time
Option B:	Cannot estimate interactions
Option C:	all possible combination of factor levels are tested
Option D:	Levels are not tested
Q17.	Factorial designs allow us to study both _____ effects of the independent variables on the dependent(s).
Option A:	Main and interactive

Option B:	Rank order and correlational
Option C:	Symbiotic and dichotomous
Option D:	Dependent and independent
Q18.	What statistical procedure is used to assess the statistical significance of the main effects and the interaction(s) in a factorial design?
Option A:	Analysis of covariance
Option B:	Correlation
Option C:	T-test
Option D:	Analysis of variance
Q19.	Which of the following item is required to be considered in logistics of testing?
Option A:	a plan to acquire materials needed for various test combinations
Option B:	regression model
Option C:	Taguchi Orthogonal Array
Option D:	missing runs
Q20.	Which of the following is an example of a plan for identifying results of the experimental trials?
Option A:	conducting missing trials
Option B:	tagging parts with trial and repetition numbers
Option C:	confounding
Option D:	preparing data sheets
Q21.	Large differences in results from trial to trial can happen in case of _____.
Option A:	good data sets
Option B:	bad data sets
Option C:	sample data sets
Option D:	attribute data sets
Q22.	Consistent results within a trial can be achieved with _____.
Option A:	good data sets
Option B:	bad data sets
Option C:	sample data sets
Option D:	conducting missing trials
Q23.	Which of the following is known as a structured approach for determining the "best" combination of inputs to produce a product or service _____.
Option A:	Taguchi approach
Option B:	signal to noise ratio

Option C:	design of experiments
Option D:	linear regression
Q24.	The factors whose values are hard-to-control during normal process or use conditions are called as-
Option A:	control factors
Option B:	noise factors
Option C:	random factors
Option D:	robust factors
Q25.	Which of the following is not an example of common types of noise factors?
Option A:	environmental factors
Option B:	customer usage
Option C:	Degradation that occurs through usage and environmental exposure
Option D:	cake mixture ingredients

Program: BE_____ Engineering

Curriculum Scheme: Rev2016

Examination: Fourth Year Semester VII

Course Code: ILO7011 and Course Name: Product Life Cycle Management

Time: 1hour

Max. Marks: 50

Note to the students: - All the Questions are compulsory and carry equal marks .

Q1.	The PLC describes the stages a new product goes through in the---
Option A:	Introduction phase
Option B:	Test Market
Option C:	Product Development
Option D:	Market Place
Q2.	In introduction stage of PLC sales grow slowly and
Option A:	Competition becomes tough
Option B:	Profit is Minimal
Option C:	More Investors needed
Option D:	Profit is Maximum
Q3.	Marketing Objective for the maturity stage of PLC is
Option A:	Maintain Brand Loyalty
Option B:	Stress Differentiation
Option C:	Harvest
Option D:	Deletion
Q4.	PLC stage where Competitors appears is
Option A:	Introduction phase
Option B:	Decline Phase

Option C:	Maturity
Option D:	Growth
Q5.	The stage when the cost of gaining new Buyers increases
Option A:	Growth
Option B:	Introduction
Option C:	Maturity
Option D:	Pre-Investment
Q6.	Color and size of the product, brand and packaging are considered as,
Option A:	Chemical features of product
Option B:	Physical features of product
Option C:	Product designing
Option D:	Product manufacture
Q7.	Developing a unique superior product with high quality, new features, and high value in use is _____ in new product development strategy.
Option A:	New product development process
Option B:	Typical reasons for failure
Option C:	Success factors
Option D:	Product concept
Q8.	Reason of product failure associated with its feature is due to,
Option A:	Good quality of product
Option B:	Good quantity of product
Option C:	Poor quality of product
Option D:	Poor quantity of product

Q9.	Which of the following is the first step of product development process?
Option A:	Production ramp-up
Option B:	Prototyping
Option C:	Product design
Option D:	Identification of customer needs
Q10.	In which of the following stage of Product Development Process, a detailed specification for the product development and pricing is established?
Option A:	Launch
Option B:	Testing
Option C:	Feature specification
Option D:	Idea screening
Q11.	Product data management is the activity of _____
Option A:	Managing product data.
Option B:	Invention data recording.
Option C:	Managing computer for data.
Option D:	Manipulation of data.
Q12.	A _____ is a high-level data model that shows, from the user viewpoint, the main entities and the relationships between them. It may also define the entities, and show their attributes and structure
Option A:	Physical data model
Option B:	Conceptual data model
Option C:	Entity-relationship model
Option D:	Logical data model

Q13.	A _____ is a very detailed model that is specific to the technology (e.g., database). It shows how the data will be physically stored and accessed.
Option A:	Logical data model
Option B:	Conceptual data model
Option C:	Physical data model
Option D:	Entity relationship model
Q14.	Virtual product development is the Practice of _____ and developing the products in entire 2D/3D environment
Option A:	prototyping
Option B:	producing
Option C:	protecting
Option D:	purchasing
Q15.	_____ is not the component of virtual product development
Option A:	Virtual product design
Option B:	Virtual product simulation
Option C:	Virtual product manufacturing
Option D:	shop floor manufacturing
Q16.	_____ is not a part of digital manufacturing
Option A:	virtual plant design
Option B:	virtual process planning
Option C:	virtual assembly visualization
Option D:	realistic manufacturing
Q17.	Sustainability Science is the study of the concepts of sustainable development and----- _____ .

Option A:	Environmental Science
Option B:	General Science
Option C:	Social science
Option D:	Geo science
Q18.	UN decade of education for Sustainable development
Option A:	2002-11
Option B:	2003-12
Option C:	2004-13
Option D:	2005-14
Q19.	Number of sustainable development goals (SDGs) by UN are
Option A:	15
Option B:	16
Option C:	17
Option D:	18
Q20.	LCA stands for
Option A:	life cycle assessment
Option B:	life cycle analogy
Option C:	Life cycle assurance
Option D:	Life cycle Array
Q21.	Product is the ultimate objective of variety reduction
Option A:	Simplification
Option B:	Standardization
Option C:	Specialization
Option D:	Socialization

Q22.	An attractive idea must be developed into a
Option A:	Product idea
Option B:	product concept
Option C:	Test market
Option D:	Product image
Q23.	There are _____ basic components of an EDM/PDM system
Option A:	NINE
Option B:	SEVEN
Option C:	SIX
Option D:	FIVE
Q24.	Select suitable potential reasons why to implement PDM
Option A:	Data missing in hard drives, systems not responding, less data is stored
Option B:	Life cycle is managed, less systems available, data is sufficient
Option C:	Data is not centralized, CAD versions are not supported, messed up with data in mapping
Option D:	Data is available but extended facility is not existing.
Q25.	Select suitable reasons, so that PDM can lead to major benefits
Option A:	Huge investments may attract more profits
Option B:	Eases data availability, no data is missing, data storage is done
Option C:	Generates revenues, quality of product improves
Option D:	Reduces product development times by 25%, reduces cost by 15%.